

What is claimed is:

Sub A1 →
1. With a ball valve assembly having: a valve body including an inlet face with a mounting flange and an inlet, and an outlet face with a mounting flange and an outlet, and a passageway therethrough from the inlet to the outlet, and a valve ball in the passageway and operable to close the passageway thereby dividing the passageway into an inlet passageway and an outlet passageway, and first and second seals engaging the valve ball at the outlet passageway and the inlet passageway, respectively, and a seal retainer ring received in the outlet passageway and normally retaining the first seal against the valve ball in the body, and the body having mounting holes in the flanges, apparatus for replacing the second seal and comprising:

a base having a mounting face with mounting holes spaced for registry with at least two of the mounting holes in the outlet face flange;

first and second arms pivotally mounted to the base, each of the arms having active and rest positions, and each of the arms having a distal end with a recess therein;

a screw having a pad at the lower end and having a tool receiver at the upper end and having two nuts threadedly received thereon and operable to load the arms when in their active positions, the recesses on the distal ends of the arms being sized to receive the screw therein.

Sub 1
2. A method of removing the first seal from the ball valve assembly of claim 1 and comprising the steps of:

attaching the mounting face of the base to the outlet face of the valve body;

placing the lower end of the screw on the valve ball;

placing the distal end of the first arm directly above the ball;

placing the recess in the distal end of the first arm;

moving the first bearing against the bottom of the distal end of the first arm at the screw;

turning the nut while holding the screw to jam the screw pad against the ball and thereby jam the ball against the second seal to seal closed the inlet passageway;

removing the seal retainer ring from the valve body;

removing the first seal from the valve body;

placing the distal end of the second arm in position under the retainer ring and above the ball;

turning the second nut while holding the screw to continue to jam the screw pad against the ball and thereby cooperate with the first arm and screw to jam the ball against the second seal to maintain second seal closure of the inlet passageway;

loosening the first nut enough to enable movement of the distal end of the first arm away from the screw;

and removal of the retainer ring from the screw.

3. The method of claim 2 and further comprising the step of:

placing the first seal above the distal end of the second arm before moving the distal end of the second arm into position above the ball.

4. The method of claim 3 and further comprising the step of:

removing the first seal from the screw after removing the retainer ring from the screw.

Sub 122 5. The method of claim 2 and further comprising the step of:

removing the first seal.

6. The method of claim 5 and further comprising the steps of:

installing a replacement seal on the screw above the distal end of the second arm;

re-installing the retainer ring on the screw above the replacement seal;

returning the distal end of the first arm into position over the ball and adjacent the screw and above the replacement seal and the retainer ring;

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turning the first nut while holding the screw to again enable the first arm to jam the screw pad against the ball and thereby cooperate with the second arm and screw to jam the ball against the second seal to continue to seal closed the inlet passageway;

loosen the second nut enough to enable movement of the distal end of the second arm away from the screw;

lower the replacement seal into position in the valve body against the valve ball; and

return the retainer ring into position in the valve body against the replacement seal.

7. The method of claim 6 and further comprising the steps of:

releasing the first nut and removing the screw.

8. The method of claim 7 and further comprising the step of:

removing the base from the outlet face of the valve body flange.